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[54] **METHOD AND APPARATUS FOR PREFORMING MUTATIONS IN A GENETIC ALGORITHM-BASED UNDERWATER TARGET TRACKING SYSTEM**

[75] Inventors: **David J. Ferkinhoff**, Middletown; **John G. Baylog**, Tiverton, both of R.I.

[73] Assignee: **The United States of America as represented by the Secretary of the Navy**, Washington, D.C.

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[58] **Field of Search** 367/131, 124; 364/516, 517

[56] **References Cited**

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Primary Examiner—Ian J. Lobo

Attorney, Agent, or Firm—Michael J. McGowan; Michael F. Oglo; Prithvi C. Lall

[57] **ABSTRACT**

A method for performing mutations in a genetic algorithm-based underwater acoustic contact tracking system includes the steps of: (i) providing an initially ordered list of bit numbers; (ii) selecting a random number from a uniform distribution of numbers; (iii) performing an inverse mapping of the selected random number via a binomial distribution, to determine a number of bits to mutate; (iv) determining if mutation is to be performed; (v) selecting particular bits to mutate; (vi) complementing selected bits; and (vii) outputting mutated contact state variables. The invention further contemplates a system for performing the above method.

10 Claims, 5 Drawing Sheets